Application No. 10/055,504
Filed: October 25, 2001

IN THE CLAIMS

1. (Currently amended) An intervertebral disc system comprising:

at least one anulus augmentation device;

at least one nuclear augmentation material;

wherein the anulus augmentation device is configured to resist migration within the disc region bounded by the anulus and vertebral body endplates without depending on the nuclear augmentation material, ~~and~~

wherein the anulus augmentation device is independent of the nuclear augmentation material~~;~~,

wherein the anulus augmentation device comprises a biocompatible support member, wherein said biocompatible support member comprises a metallic lattice frame and a membrane, wherein said biocompatible support member partially encapsulates the nuclear augmentation material, and

wherein said nuclear augmentation material comprises a fluid that ~~is incapable of changing phase in situ~~ remains fluid at body temperature.

2. (Previously Presented) The system of Claim 1, wherein said anulus augmentation device prevents the extrusion of materials from within the space normally occupied by the nucleus pulposus and inner anulus fibrosus.

3. (Previously Presented) The system of Claim 1, wherein said anulus augmentation device is a barrier.

4. (Previously Presented) The system of Claim 1, wherein said nuclear augmentation material restores diminished disc height and pressure.

5. (Previously Presented) The system of Claim 1, wherein said nuclear augmentation material induces the growth or formation of material within the nuclear space.

6. (Previously Presented) The system of Claim 1, wherein said anulus augmentation device is removable.

7. (Previously Presented) The system of Claim 1, wherein said nuclear augmentation material is removable.

8. (Previously Presented) The system of Claim 1, wherein said nuclear augmentation material comprises a pharmacologically active agent.

9. (Withdrawn) The system of Claim 1, wherein said nuclear augmentation material is selected from the group consisting of: liquids, gels, solids, and gases.

10. (Withdrawn) The system of Claim 1, wherein said nuclear augmentation material is capable of changing phase.

11. (Previously presented) The system of Claim 1, wherein said fluid is selected from the group consisting of one or more of the following: steroids, antibiotics, tissue necrosis factors, tissue necrosis factor antagonists, analgesics, growth factors, genes, gene vectors, hyaluronic acid, non-crosslinked collagen, fibrin, liquid fat, oils, synthetic polymers, polyethylene glycol, liquid silicones, synthetic oils, and saline.

12. (Withdrawn) The system of Claim 1, wherein at least a portion of said nuclear augmentation material changes phase from a liquid to a gel.

13. (Withdrawn) The system of Claim 12, wherein said gel is selected from the group consisting of one or more of the following: acrylonitriles, acrylic acids, polyacrylimides, acrylimides, acrylimidines, polyacrylonitriles, and polyvinylalcohols.

14. (Withdrawn) The system of Claim 1, wherein at least a portion of said nuclear augmentation material changes phase from a liquid to a solid.

15. (Withdrawn) The system of Claim 14, wherein said solid is in powder form.

16. (Withdrawn) The system of Claim 14, wherein said solid is selected from the group consisting of one or more of the following: resorbable material, polyurethane, polyester, PEEK, PET, FEP, PTFE, ePTFE, PMMA, nylon, carbon fiber, DELRIN (acetal), polyvinyl alcohol gels, polyglycolic acid, polyethylene glycol; silicone gel, silicone rubber, vulcanized rubber, gas filled vesicles, bone, hydroxy apetite, cross-linked collagen, muscle tissue, fat, cellulose, keratin, cartilage, protein polymers, transplanted nucleus pulposus, bioengineered nucleus pulposus, transplanted anulus fibrosus and bioengineered anulus fibrosus.

17. (Withdrawn) The system of Claim 12, wherein at least a portion of said gel is impregnated or coated with one or more biologically active compounds.

18.(Withdrawn) The system of Claim 17, wherein said biologically active compound is selected from the group consisting of one or more of the following: drug carriers, genetic vectors, naked genes, therapeutic agents, growth renewal agents, growth inhibitory agents, analgesics, anti-infectious agents, and anti-inflammatory drugs.

19.(Withdrawn) The system of Claim 14, wherein at least a portion of said solid is impregnated or coated with at least one biologically active compound.

20.(Withdrawn) The system of Claim 19, wherein said biologically active compound is selected from the group consisting of one or more of the following: drug carriers, genetic vectors, naked genes, therapeutic agents, growth renewal agents, growth inhibitory agents, analgesics, anti-infectious agents, and anti-inflammatory drugs.

21.(Currently amended) A method of repairing or rehabilitating an intervertebral disc by augmentation comprising:

inserting at least one nuclear augmentation material;

inserting at least one anulus augmentation device to partially encapsulate the nuclear augmentation material; and

anchoring the anulus augmentation device to the disc;

wherein said at least one anulus augmentation device is configured to resist migration within the disc region bounded by the anulus and vertebral body endplates without depending on the nuclear augmentation material;,

wherein said at least one anulus augmentation device comprises a membrane and a frame, ~~and~~

~~inserting at least one nuclear augmentation material~~,

wherein said at least one nuclear augmentation material is independent of said anulus augmentation device;, and

wherein said nuclear augmentation material comprises a fluid that ~~is incapable of changing phase in the disc environment~~ remains fluid at body temperature.

22. (Previously Presented) The method of Claim 21, wherein said nuclear augmentation material conforms to healthy regions of the anulus while said anulus augmentation device shields weaker regions of the anulus.

Claims 23-43 Canceled

44. (Previously presented) The intervertebral disc system of Claim 1, furthering comprising at least one anchor, wherein said at least one anchor is coupled to at least a portion of the anulus augmentation device.

45. (Previously Presented) The intervertebral disc system of Claim 1, wherein the anulus augmentation device comprises a barrier.

46. (Previously Presented) The intervertebral disc system of Claim 1, wherein the anulus augmentation device has a cylindrical cross-section.

47. (Previously Presented) The intervertebral disc system of Claim 1, wherein the anulus augmentation device is configured to present a concavity facing the nucleus in the implanted orientation.

Claims 48-61 Canceled

62. (Previously Presented) The intervertebral disc system of Claim 1, wherein at least a portion of said fluid is absorbable.

63. (Canceled)

64. (New) The intervertebral disc system of Claim 1, wherein the frame is non-inflatable.

65. (New) The method of Claim 21, wherein the step of inserting at least one anulus augmentation device to partially encapsulate the nuclear augmentation material comprises inserting at least one anulus augmentation device to partially encapsulate the nuclear augmentation without inflating the anulus augmentation device.

66. (New) The method of Claim 21, wherein the step of inserting at least one nuclear augmentation material comprises inserting at least one nuclear augmentation material without removing a substantial portion of native nucleus.